

Exotic Species Control

An Investigation of Herbicide Treatments to Eradicate Autumn Olive on Taylorsville Lake WMA

Ben Robinson and Tom Edwards, KDFWR

Autumn olive (*Elaeagnus umbellata*) is a medium to large shrub which is listed by the Kentucky Exotic Pest Plant Council as one of the most threatening invasive plants in the Commonwealth. This exotic shrub was introduced into the United States in 1830 from Asia and has historically been planted to provide food and cover for wildlife and to prevent erosion along roadways and reclaimed mine sites. Unfortunately, autumn olive displaces native vegetation, readily colonizes disturbed areas, and, once established, is difficult and costly to eradicate. Pruning and prescribed burning have proven ineffective in controlling established autumn olive and there are no widely established, successful herbicide protocols currently available.

In an effort to assess the efficacy of various herbicides in eradicating autumn olive on Taylorsville Lake Wildlife Management Area, we applied five herbicide treatments (plus one control). These treatments included: 1) removal of autumn olive and treatment of the stump with Garlon 4A (Triclopyr); 2) foliar application of 2,4-D; 3) foliar application of Garlon 3A; 4) basal application of Pathfinder 2; and 5) granular treatment of Spike 20P. All treatments were applied July 2006. Thus far, it appears that foliar application of Garlon 3A was most effective at killing autumn olive (no sprouting resulted). In 2008, we plan to re-assess these treated autumn olive shrubs to determine long-term success of each of these herbicide treatments.



Autumn Olive in winter / Ben Robinson

Funding Source: Pittman-Robertson (PR) and Non-Federal Aid (NFA)

Comprehensive Wildlife Conservation Strategy: Appendix 3.3, Priority Conservation Action #76.

Sericea lespedeza Control on Peabody Wildlife Management Area

Eric Williams and Jack Bell, KDFWR

Sericea lespedeza (*Lespedeza cuneata*), considered a noxious weed, is a perennial legume with a three to four foot branching root system. This plant is capable of forming dense stands and is characterized by heavy seed production and allelopathic effects (it releases chemicals that harm other plants growing nearby). As a result of these characteristics, *Sericea* easily out-competes native species of forbs and grasses. Adding to its competitive advantage, *Sericea* originated in Asia and has few insect predators or diseases in the United States. Although this species is listed as a severe threat by the Kentucky Exotic Pest Plant Council, it is still widely used in mine



Sericea lespedeza / Eric Williams

reclamation efforts because it is easily established and quickly curbs erosion. Unfortunately, the forage provided by this plant is low in both palatability and nutritive value, and the homogenous stands are inferior wildlife habitat when compared to native grass stands.

Peabody Wildlife Management Area is approximately 41,000 acres in size and was extensively mined beginning in the 1930's, with strip mining serving as the primary method for coal extraction. *Sericea lespedeza* was extensively used in the reclamation process at Peabody WMA, and intensive control efforts began in 1998. Since then, we've tried over a dozen herbicide treatments (differing in herbicide, application rates, and spray timing) to assess which treatments most effectively control *Sericea* to allow for the establishment of warm season grass stands. The below chart provides details of overall results with herbicides used on Peabody WMA since 1998:

| POOR | FAIR | EFFECTIVE |
|--------------|--------|-----------|
| 2,4-D A or E | Escort | Garlon 3A |
| Weedmaster | Ally | Vista |
| Plateau | | Crossbow |

Currently, we are continuing with this work to assess the efficiency of Pasturegard and Select herbicides to control *Sericea*. During 2007, we established five Pasturegard test fields on Peabody WMA and treated these fields 13 June 2007. We also established four Select herbicide plots on which we applied four different application rates (2X, 4X, 6X, and 8X). Unfortunately, the severe summer drought confounded our assessments of these treatments; as a result, in 2008, we plan to persist with efforts to measure the success of both Pasturegard and Select herbicides.

Funding Source: Pittman-Robertson (PR) and Non-Federal Aid (NFA)

Comprehensive Wildlife Conservation Strategy: Appendix 3.3, Priority Conservation Action #76.

Use of Rodeo Herbicide to Control *Phragmites australis* on Peabody Wildlife Management Area

Eric Williams, KDFWR



Common Reed, *Phragmites australis* / Danna Baxley

Phragmites australis, also known as “common reed” is an invasive wetland plant that forms dense thickets in or near shallow water. These *Phragmites* “mats” displace native wetland vegetation, block sunlight from reaching the aquatic community, and even have the ability to alter wetland hydroperiod. *Phragmites* is difficult to eradicate and control because it is long-lived, capable of reproducing by seeds or asexually by rhizomes, and has the ability to spread up to five meters per year by horizontal stems,

or “runners” which put down roots at regular intervals. Many techniques used to control other invasive plants have been found to be ineffective in controlling *Phragmites*. For example, mowing and cutting as well as spring burning have been found to stimulate *Phragmites* growth.

On Peabody Wildlife Management Area, many wetland areas have been invaded by *Phragmites*, and we are currently attempting to find a cost-effective technique to eradicate this plant. Rodeo may be applied in the summer or fall, when leaves are emergent, and we wanted to test the efficiency of a late-September application on Peabody WMA. On September 27, 2007 we sprayed three lake “plots” with a 1.5% solution of Rodeo herbicide, which is designed to kill the roots of emergent plants for multi-year control. Although some die-back was evident two weeks after the herbicide treatment, we will not be able to evaluate treatment success until May 2008. If initial eradication efforts are not successful, we will continue applying herbicide to these lake plots in hopes of determining the extent and duration of treatment necessary to control *Phragmites*.

Funding Source: Pittman-Robertson (PR) and Non-Federal Aid (NFA)

Comprehensive Wildlife Conservation Strategy: Appendix 3.3, Priority Conservation Action #76.

Using Varying Frequencies of Prescribed Fire in Combination with Herbicide Applications to Control *Sericea Lespedeza* on Peabody Wildlife Management Area

Eric Williams, KDFWR

Disturbance is a required part of managing native warm season grasses, and fire is one of the preferred management tools for this task. In order to establish native warm season grasses, *sericea lespedeza* (*Lespedeza cuneata*) must be controlled; unfortunately, if not followed by herbicide treatment, prescribed burning has been shown to actually increase stand density of this invasive plant. Although a variety of herbicides have been shown to effectively control *Lespedeza cuneata* (Garlon 3A, Vista, Crossbow), there is very little available information regarding the

interaction between fire frequency and herbicide application as it relates to successful *sericea* control. Identifying combinations of fire and herbicide use that are most effective at controlling *sericea* will result in long-term savings of time and money as well as improved wildlife habitat for the Commonwealth.

On Peabody Wildlife Management Area, we are currently in the process of investigating the interaction between prescribed fire and herbicide application on 10-acre test fields. Our treatments include: 1) burning on a two to three year rotation, then applying herbicide in the spring or summer; 2) burning on a one year rotation and applying Garlon 3A post-burn every year; 3) burning every year with no herbicide application; and 4) no herbicide application and no burn regime (control). The standard protocol currently used in wildlife management (burning on a 2-3 year rotation, then applying herbicide in the spring or summer), makes forb establishment extremely difficult. We are hoping to find a combination of fire frequency and herbicide application that is more conducive to forb establishment, thus resulting in improved wildlife habitat.



Sericea lespedeza after herbicide treatment / Eric Williams

Funding Source: Pittman-Robertson (PR) and Non-Federal Aid (NFA)

Comprehensive Wildlife Conservation Strategy: Appendix 3.3, Priority Conservation Action #76.